

Corrigendum: Variations of Orthogonality of Latin Squares

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In the proof of Theorem 2.9 ([1]), the treatment of nonlinear polynomials is not correct and in fact, the result is false in general $P(x, y)$. However, the proof is correct in case of that $P(x, y)$ is linear, the last four sentences of the proof should be also removed and the statement of the result should be replaced with the following.

Theorem 2.9 *For odd n , Latin square over \mathbb{Z}_n formed by a bivariate linear permutation polynomial $P(x, y)$ is orthogonal with its mirror image.*

The reason of corrected conclusion is as follows:

Identifying a pair of bivariate polynomials modulo n which represent a pair of orthogonal Latin squares is not obvious. But for odd n , a Latin square formed by a bivariate linear polynomial is orthogonal to its mirror image. Moreover, no two bivariate polynomials over \mathbb{Z}_n , when n is even can form orthogonal Latin squares.

References

- [1] Vadiraja Bhatta G. R. and B. R. Shankar, Variations of orthogonality of Latin squares, *International J. Math. Combin.*, 3(2015), 55–61.

¹Received August 30, 2024, Accepted September 15, 2024.